

PROCESSING COPY

OCP

INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

This material contains information affecting the National Defense of the United States within the meaning of the Espionage Laws, Title 18, U.S.C. Secs. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

C-O-N-F-I-D-E-N-T-I-A-L

50X1-HUM

COUNTRY	East Germany	REPORT	
SUBJECT	Working Instructions for Straight Sided Crank Presses, Types DC and DU, Manufactured by VEB Werkzeugmaschinenfabrik Aschersleben	DATE DISTR.	14 OCT 1957
		NO. PAGES	1
		REQUIREMENT NO.	RD
DATE OF INFO.		REFERENCES	50X1-HUM
PLACE & DATE ACQ.			50X1-HUM

SOURCE EVALUATIONS ARE DEFINITIVE APPRAISAL OF CONTENT IS TENTATIVE

working instructions for straight sided crank presses, types DC and DU, manufactured by VEB Werkzeugmaschinenfabrik Aschersleben.

50X1-HUM

13 OCT 1957

Ly/so

C-O-N-F-I-D-E-N-T-I-A-L-

Incl. att.

STATE	<input checked="" type="checkbox"/>	ARMY	<input checked="" type="checkbox"/>	NAVY	<input checked="" type="checkbox"/>	AIR	<input checked="" type="checkbox"/>	FBI	<input checked="" type="checkbox"/>	AEC				
-------	-------------------------------------	------	-------------------------------------	------	-------------------------------------	-----	-------------------------------------	-----	-------------------------------------	-----	--	--	--	--

(Note: Washington distribution indicated by "X"; Field distribution by "#".)

INFORMATION REPORT INFORMATION REPORT

57

**Working Instruction
for Straight Sided Crank Presses
of Types DC and DU**

Page 1

**THIS WORKING INSTRUCTION
HAS BEEN ELABORATED FOR WORKSHOP USE**

Working instructions, it is known, frequently are not obeyed in such a manner as this is necessary and, before all, practical for the operator. In many cases satisfactory results of output and work are not attained only for the reason of the operator, though adhering to the sense, not doing so to the reading of the instruction. In his opinion, it is true, he believes to be able to make proper use of the instruction after having read it once, but, nevertheless, he often causes damages by failing to consider special details.

Therefore: Do adhere strictly to our working instruction! The hints given therein are based on practical experiences, and are to assist you in your work.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DC and DU**

Page 2

1 SUMMARY

Straight Sided Crank Press D

(1) Summary

(2) Transport
Assembly
Attendance

(3) Electric
Parts

(4) Lubrication

(5) Operation

(6) Schedules

(7) Gear Plan
Spare Parts

(8) Tools
Accessories
Additional
Attachments

Machine symbol
and design

Additional attachments:

.....

.....

Order No.: Dated:

Fabr. No.: Produced in

(9) Terms of
Acceptance

50X1-HUM

**Working Instruction
for the Straight Sided Crank Press
of Type DU 160/630**

Page 3

MAIN DIMENSIONS**Main Press**

Max. pressure 17 mm above lower position of crank	160000 kgs
Height of stroke	250 mm
Ram adjustment	110 mm
Max. clearance between table and ram	800 mm
Min. clearance between table and ram	440 mm
Inside width between the stands	630 mm
Table area	630 x 1060 mm
Opening in the table	315 x 530 mm
Ram area	450 x 860 mm
Thickness of the chucking plate	110 mm
Driving motor	18 KW, n = 1500 rpm
Speed of the flywheel shaft	630 rpm
Space required	abt. 1600 x 1800 mm
Net weight (with side press)	about 12000 kgs
Gross weight (with side press), seaworthy packed	about 13800 kgs
Loading space required, chests: length	about 5300 mm
width	about 2300 mm
height	about 2100 mm

Side Press

Maximum pressure	50000 kgs
Overhang	225 mm
Height of stroke	60 mm
Ram adjustment	75 mm
Maximum clearance between table and ram	355 mm
Minimum clearance between table and ram	220 mm
Table area	400 x 630 mm
Opening in the table	140 x 225 mm
Ram area	315 x 450 mm

Total Wear of the Friction Linings

Coupling side	14 mm
Brake side	10 mm

50X1-HUM

**Working Instruction
for the Straight Sided Crank Press
of Type DU 250/800**

Page 3

MAIN DIMENSIONS**Main Press**

Max. pressure 21 mm above lower position of crank	250000 kgs
Height of stroke	315 mm
Ram adjustment	130 mm
Maximum clearance between table and ram	1000 mm
Minimum clearance between table and ram	555 mm
Inside width between the stands	810 mm
Table area	800 x 1180 mm
Opening in the table	400 x 600 mm
Ram area	620 x 960 mm
Thickness of the chucking plate	110 mm
Driving motor	18 KW, n = 1430 rpm
Speed of the flywheel shaft	630 rpm
Spaces required	abt. 2100 x 2200 mm
Net weight	about 1900 kgs
Gross weight (with side press, seaworthy packed)	about 2100 kgs
Leading space required, chests: length: about	6000 mm
width: about	2700 mm
height: about	2600 mm

Side Press

Maximum pressure	80000 kgs
Overhang	280 mm
Height of stroke	80 mm
Ram adjustment	85 mm
Maximum clearance between table and ram	400 mm
Minimum clearance between table and ram	235 mm
Table area	450 x 710 mm
Opening in the table	180 x 280 mm
Ram area	355 x 500 mm

Total Wear of the Friction Linings

Coupling side	15 mm
Brake side	11 mm

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DC 250/800**

Page 3

MAIN DIMENSIONS**Press**

Max. pressure 21 mm above lowest crank position	250000 kgs
Height of stroke	315 mm
Ram adjustment	130 mm
Maximum clearance between table and ram	1000 mm
Minimum clearance between table and ram	555 mm
Inside width between the stands	810 mm
Table area	800 x 1180 mm
Opening in the table	400 x 600 mm
Ram area	620 x 960 mm
Thickness of the chucking plate	130 mm
Driving motor	28 KW, n = 1430 rpm
Speed of the flywheel shaft	630 rpm
Space required	abt. 1800 x 1900 mm
Net weight	about 17500 kgs
Gross weight (seaworthy packed)	about 19500 kgs
Loading space required, chests: length: about	6200 mm
width: about	2400 mm
height: about	2300 mm

Total Wear of the Friction Linings

Coupling side	15 mm
Brake side	11 mm

Stroke Numbers of the Machine

- | | |
|--|-----------|
| 1) Maximum stroke number of the continuously running machine in idle run | = 18 p.m. |
| 2) Useful stroke number of the continuously running machine at an output of 4000 mkg per stroke | = 16 p.m. |
| 3) Maximum stroke number with single stroke adjustment during the running-in time of the machine (up to 50000 motions) | = 8 p.m. |
| 4) Maximum stroke number with single stroke adjustment after the running-in time of the machine (after 50000 motions) | = 10 p.m. |
| 5) Useful stroke number of the machine with single stroke adjustment and the permissible maximum output of 6700 mkg per stroke | = 8 p.m. |

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DC 315/800**

Page 3

MAIN DIMENSIONS**Press**

Max. pressure 21 mm above lowest crank position	315000 kgs
Height of stroke	315 mm
Ram adjustment	140 mm
Maximum clearance between table and ram	1000 mm
Minimum clearance between table and ram	545 mm
Inside width between the stands	800 mm
Table area	800 x 1250 mm
Opening in the table	400 x 630 mm
Ram area	620 x 1000 mm
Thickness of the chucking plate	140 mm
Driving motor	32 KW, n = 1390 rpm
Speed of the flywheel shaft	560 rpm
Space required	abt. 1900 x 2200 mm
Net weight	about 25000 kgs
Gross weight (seaworthy packed)	about 27200 kgs
Leading space required, chests: length: about	6400 mm
width: about	2700 mm
height: about	2400 mm

Total Wear of the Friction Linings

Coupling side	16 mm
Brake side	10 mm

Stroke Numbers of the Machine

- 1) Maximum stroke number of the continuously running machine in idle run = 18 p.m.
- 2) Useful stroke number of the continuously running machine at an output of 5000 mkg per stroke = 16 p.m.
- 3) Maximum stroke number with single stroke adjustment during the running-in time of the machine (up to 50000 motions) = 6 p.m.
- 4) Maximum stroke number with single stroke adjustment after the running-in time of the machine (after 50000 motions) = 8 p.m.
- 5) Useful stroke number of the machine with single stroke adjustment an permissible maximum output of 9000 mkg per stroke = 8 p.m.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DV 315/800**

Page 3

MAIN DIMENSIONS**Main Press**

Max. pressure 21 mm above lowest crank position	315000 kgs
Height of stroke	315 mm
Ram adjustment	140 mm
Maximum clearance between table and ram	1000 mm
Minimum clearance between table and ram	545 mm
Inside width between the stands	800 mm
Table area	800 x 1250 mm
Opening in the table	400 x 630 mm
Ram area	620 x 1000 mm
Thickness of the chucking plate	140 mm
Driving motor	32 kW, n = 1390 rpm
Speed of the flywheel shaft	560 rpm
Space required	abt. 2150 x 2300 mm
Net weight (with side press)	about 26500 kgs
Gross weight (with side press, seaworthy packed)	about 28700 kgs
Leading space required, chests: length:	about 6600 mm
width:	about 2800 mm
height:	about 2700 mm

Side Press

Maximum pressure	100000 kgs
Overhang	315 mm
Height of stroke	80 mm
Ram adjustment	90 mm
Maximum clearance between table and ram	320 mm
Minimum clearance between table and ram	150 mm
Table area	500 x 750 mm
Opening in the table	200 x 315 mm
Ram area	375 x 530 mm

Total Wear of the Friction Linings

Coupling side	16 mm
Brake side	10 mm

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DC 160/630**

Page 3

MAIN DIMENSIONS**Press**

Max. pressure 17 mm above lowest crank position ..	160000 kgs
Height of stroke	250 mm
Ram adjustment	110 mm
Maximum clearance between table and ram	800 mm
Minimum clearance between table and ram	440 mm
Inside width between the stands	630 mm
Table area	630 x 1060 mm
Opening in the table	315 x 530 mm
Ram area	450 x 860 mm
Thickness of the chucking plate	110 mm
Driving motor	18 KW, n = 1500 rpm
Speed of the flywheel shaft	630 rpm
Space required	abt. 1600 x 1700 mm
Net weight	about 11000 kgs
Gross weight (seaworthy packed)	about 12800 kgs
Leading space required, chests: length: about	5300 mm
width: about	2250 mm
height: about	2100 mm

Total Wear of the Friction Linings

Coupling side 14 mm

Brake side 10 mm

Stroke Numbers of the Machine

- | | |
|--|-----------|
| 1) Maximum stroke number of the continuously running machine in idle run | = 22 p.m. |
| 2) Useful stroke number of the continuously running machine at an output of 3000 mkg per stroke | = 20 p.m. |
| 3) Maximum stroke number with single stroke adjustment during the running-in time of the machine (up to 50000 motions) | = 9 p.m. |
| 4) Maximum stroke number with single stroke adjustment after the running-in time of the machine (after 50000 motions) | = 11 p.m. |
| 5) Useful stroke number of the machine with single stroke adjustment and permissible maximum output of 5000 mkg per stroke | = 9 p.m. |

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DU 315/800**

Page 4

MAIN DIMENSIONS**Stroke Numbers of the Machine**

- | | | |
|--|---|---------|
| 1) Maximum stroke number of the continuously running machine in idle run | = | 18 p.m. |
| 2) Useful stroke number of the continuously running machine at an output of 5000 mkg per stroke | = | 16 p.m. |
| 3) Maximum stroke number with single stroke adjustment during the running-in time of the machine (up to 50000 motions) | = | 6 p.m. |
| 4) Maximum stroke number with single stroke adjustment after the running-in time of the machine (after 50000 motions) | = | 8 p.m. |
| 5) Useful stroke number of the machine with single stroke adjustment and permissible maximum output of 9000 mkg per stroke | = | 8 p.m. |

The progressing development of our machines induces their continuous modification. It may be, for this reason, that in a given case the working instruction does not agree in any details with the machine supplied.

When ordering spare parts, therefore, always the design and the number of the machine should be stated.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DC 160/630**

Page 4

MAIN DIMENSIONS**Air Cushion**

Theoretical power with 6 atmospheres	20000 kgs
Stroke	125 mm
Pressing face	$2 \times 1900 = 3800 \text{ cm}^2$
Working volume	48 ltrs
Capacity of the air vessel	400 ltrs
Type of compressor	K1 12/A/100

The progressing development of our machines induces their continuous modification. It may be, for this reason, that in a given case the working instruction does not agree in all details with the machine supplied.

When ordering spare parts, therefore, always the design and the number of the machine should be stated.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DC 250/800
and DC 315/800**

Page 4

MAIN DIMENSIONS

Air Casheen

Theoretical power with 6 atmospheres 32000 kgs
Stroke 160 mmg
Pressing face 4 x 1900 = 7600 cm²
Working volume 122 litres
Capacity of the air vessel
Type of compressor

The progressing development of our machines induces their continuous modification. It may be, for this reason, that in a given case the working instruction does not agree in any details with the machine supplied.

When ordering spare parts, therefore, always the design and the number of the machine should be stated.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DC and DU**

Page 5

2 TRANSPORT . ASSEMBLY . ATTENDANCE**2.1 TRANSPORT**

Ascertain upon arrival of the machine whether it has been damaged during transportation. Transport it as close as possible to its place of location. Prior to removing the crate, check carefully once more for transport damages. For crane transport suspend the parts according to Fig.1. For this purpose ropes are more husbanding and dependable than chains. When carrying out the transport without chains use as small rollers as possible, taking special care that the machine does not tilt which may easily happen, due to the elevated position of the center of gravity.

2.2 ASSEMBLY

Every machine which is expected to work exactly and to have a long life calls for a reliable standing. The required special dimensions can be gathered from the foundation plan. The foundation depth given therein is a minimum dimension depending on the ground conditions encountered on site. The foundation must be hardened before the machine is erected. Remove, on the place of installation, anticorrosive grease and dust from the machine and erect it subsequently according to Fig.2. In case of delivery with detached drawing cushion this should be inserted into the foundation pit prior to the erection of the machine, and fastened later-on to the table of the erected machine. Align the machine by means of a spirit level, tamp it and cast it in. When tamping pay attention to no cavities arising underneath the bearing surfaces. Tighten the foundation screws only after the concrete has become perfectly hard.

In case a dismantled machine is supplied, as to the assembly the following important hints should be adhered to:

(See drawing: Assembly of straight sided presses)

Prior to assembly remove anticorrosive grease and dust from all parts of the machine.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type BU 160/630**

Page 4

MAIN DIMENSIONS**Stroke Numbers of the Machine**

- | | |
|--|-----------|
| 1) Maximum stroke number of the continuously running machine in idle run | = 22 p.m. |
| 2) Useful stroke number of the continuously running machine at an output of 3000 mkg per stroke | = 20 p.m. |
| 3) Maximum stroke number with single stroke adjustment during the running-in time of the machine (up to 50000 motions) | = 9 p.m. |
| 4) Maximum stroke number with single stroke adjustment after the running-in time of the machine (after 50000 motions) | = 11 p.m. |
| 5) Useful stroke number of the machine with single stroke adjustment and permissible maximum output of 5000 mkg per stroke | = 9 p.m. |

The progressing development of our machines induces their continuous modification. It may be, for this reason, that in a given case the working instruction does not agree in any details with the machine supplied.

When ordering spare parts, therefore, always the design and the number of the machine should be stated.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DU 250/800**

Page 4

MAIN DIMENSIONS**Stroke Numbers of the Machine**

- | | |
|--|-----------|
| 1) Maximum stroke number of the continuously running machine in idle run | = 18 p.m. |
| 2) Useful stroke number of the continuously running machine at an output of 4000 mkg per stroke | = 16 p.m. |
| 3) Maximum stroke number with single stroke adjustment during the running-in time of the machine (up to 50000 motions) | = 8 p.m. |
| 4) Maximum stroke number with single stroke adjustment after the running-in time of the machine (after 50000 motions) | = 10 p.m. |
| 5) Useful stroke number of the machine with single stroke adjustment and permissible maximum output of 6700 mkg per stroke | = 8 p.m. |

The progressing development of our machines induces their continuous modification. It may be, for this reason, that in a given case the working instruction does not agree in any details with the machine supplied.

When ordering spare parts, therefore, always the design and the number of the machine should be stated.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DC and DU**

Page 6

2 TRANSPORT . ASSEMBLY . ATTENDANCE

Operating sides of table, head piece, ram and stand are marked with "B".

Align the machine table on the foundation by means of a spirit level. The drawing cushion, if supplied, should be inserted first into the foundation pit and fastened afterwards to the table. Cast in the table after having tamped it, and tighten the foundation screws after the concrete has become perfectly hard.

Figure 1: If the table is placed on the foundation according to the facing drawing the anchors should be installed and shrunk in adherence to the indicated sequence.

Figure 2: Insert the two left (or right) anchors into the table. Unscrew the lower anchor nut "Mu" until the point "a" is reached. Secure the anchor nut against displacement by tightening the screw "S". Lower the anchor down to the bottom of the foundation pit. Set up the left and right side stand respectively with unchanged guide rails and arrest them by means of the bolts "B" and the wedge driven into the table; bolt the side stands with the table.

Figure 3: Insert the ram fitted with press rods (lower half) and ejector up to the guide rails of the upright side stand. Underpin the ram according to dimensions "Ram down" and "Adjustment up" (see drawing 2 DU 2105) and place it on the table. Insert the two remaining anchors, unscrew the lower nut "Mu" to the extent "a" and lower the anchors to the bottom of the foundation pit. For setting up the second side stand, the two long ejector rails must be pushed back laterally till they are not any longer in the way of the side stand.

For this purpose firstly the two transverse ejector beams must be pulled out. The displacement of the rails is required only at single-acting straight sided crank presses (two-point system - type Df).

50X1-HUM

Working Instruction
for Straight Sided Crank Presses
of Types DC and DU

Page 7

2 TRANSPORT . ASSEMBLY . ATTENDANCE

Figure 4: Set up the head piece with mounted internal parts, arrest it by the bolts "B1", and attach the upper anchor nuts "Mo".

Figures 5 and 6: Suspend the anchor, move it upward through the head piece, and tighten the nuts "Mo" as much as possible.

Measure and record exactly the dimension "b" of each anchor.

Figure 5: Unscrew the nuts "Mo", leave them on the head piece, and set up again the anchor on the bottom of the foundation pit.

Figures 5, 6 and 7: Heat each anchor individually in sequence 1-3-2-4 or, if possible, two anchors simultaneously in sequence 1+3-2+4 in length "c" till length "d" has expanded to length "e". Move the heated anchors through the head piece upward, and unscrew the nuts "mo" up to the extent "b" plus "x". Allowance +0.1 mm. As to the dimensions "a-c-d-e" and "x" see the schedule on the sketch.

Upon finished drawing-in and shrinking of the anchors the ram is connected with the crank. The crank is turned to its lowest position and the ram with screwed-in press rod hung on through the inner space of the head piece, the bearing of the press rod is approached to the crank and the press rod cover attached. Wedge on the toothed gear wheel, set the complete flywheel shaft with laid-on V-belts on its bearings, and attach the bearing covers. All parts such as driving motor, control valve etc. now are mounted on the head piece.

Into the shrunk-in press body now the electric lines may be inserted according to the cable diagram enclosed.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DC and DU**

Page 8

2 TRANSPORT . ASSEMBLY . ATTENDANCE

Connect the compressed air pipings and greasing tubes, the latter according to their numbering, and connect the former to the main pipings. Now the machine should be turned by hand, and that by means of a spike inserted in one of the holes of the flywheel rim after the coupling has been engaged. In course of this procedure check, before all, the guide of the ram and the parallelity between table and ram face.

Above the machine a lifting device for lifting the complete flywheel shaft should be provided.

2.3 CLEANING

Cleanliness and careful attendance are considerable factors for prolonging the life of the machine. Coarse impurities, therefore, should be removed at the least once a week. Every 4 weeks the machine should be carefully cleaned.

2.4 ATTENDANCE

The regularity according to which the machine is cleaned, lubricated, and checked is decisive for its life. The instructions necessary for lubrication may be gathered from drawing . indicating also details concerning kind and time of lubrication. A double of this instruction should be handed to the operating staff. All parts of the machine calling for a continuous supply of lubricant are lubricated through a central greasing equipment attendance to which is specified in a special instruction. The supply to the individual greasing points has been adjusted by us to the maximum conveying capacity and has to be readjusted, after putting the machine into service, under most careful observation of the individual greasing points.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DO and DU**

Page 9

2 TRANSPORT . ATTENDANCE . ASSEMBLY

When renewing greasing tubes the inside of the new tubes must be carefully cleaned and filled with grease prior to the start of the machine.

The worm drive for the ram adjustment runs in an oil bath. The hollow space in the ram provided for this should be filled with oil level of which can be checked through an oil level eye. For replacing the oil two drain screws are provided. Prior to adjusting the ram lubricate the pressure spindle thread and the draw-back ring through the attached lubrication nipple.

After 3000 working hours the antifriction bearings should be carefully washed and refilled with suitable grease. Apart from this they should be listened to periodically and checked for their smooth run.

Replacement of the V-belts

Detach the bearing cover screws, the compressed air pipes, and the fastening screws of the air cylinder. Subsequently the flywheel shaft is lifted, and the V-belts are replaced by new ones.

Readjustment of the Guide Rails

Pay attention to the counter-pressure screws being tightened firmly after the guide rails are adjusted.

Play between Pressure Spindle and Pressure Pan

The cover above the draw-back ring should be adjusted in such a way that there is a close guide between the pressure spindle ball and the pressure pan. Any play probably arising in course of time should be removed by remachining the balancing disks.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DC and DU**

Page 10

2. TRANSPORT . ASSEMBLY . ATTENDANCE**2.5 PUTTING INTO SERVICE**

Prior to starting the machine one should become familiar with all operating elements and their action, and that most perfectly. Check the proper connection of the compressed air and the electric line. The manometer in the coupling compressed air line has to indicate 4 kg/cm^2 a.a., and the appropriate safety valve should respond at 4.5 kg/cm^2 a.a.

The central greasing device as well as the greasing pipes should be filled with grease. All other greasing points of the machine, which are marked with red colour, should amply be lubricated.

Test the V-belts for proper tension and satisfactory alignment.

It must be possible to turn the flywheel by hand if the coupling is disengaged. Start the motor and check the sense of rotation and the speed of the flywheel for their accordance to the indications engraved on the flywheel rim; test the ram adjusting motor.

As to testing the engagement see Drawings 3E 2397-A, 3E 2397-A1-1, and 3E 2397-A2-2

2.5. 1. Connect the control current switch "Coupling" installed in the switch cabinet.

2.5. 2. Adjust the selector switch to "Single Stroke": Press the push buttons "Coupling on" simultaneously till the ram has reached its lowest position, then stop pressing. The ram has to run upward and to stop in its upper position of stroke. If the push buttons "Coupling on" are not released during the upward stroke of the ram in spite of this it will stop in its upper position (single stroke safety device).

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DC and DU**

Page 11

2 TRANSPORT . ASSEMBLY . ATTENDANCE

Press the push buttons "Coupling on" simultaneously and release them during the downward stroke of the ram. The ram has to stop forthwith (safety stop).

2.5. 3. Adjust the selector switch to "Continuous Stroke":
Press ~~shortly~~ and simultaneously the push buttons "Coupling on". Now the ram moves continuously. Upon pressing the "Stop"-button the ram has to stop forthwith. In case these connections can be carried out the engagement is in order.

After all tests are finished the machine is started for trial run in engaged condition during which special care is taken of the properly functioning central lubrication.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DC and DU**

Page 12

3 ELECTRIC PARTS

3.1 ATTENDANCE TO THE ELECTRIC INSTALLATION

Ascertain prior to putting the machine into service:

- 3.1. 1. Is the available working voltage in accordance to the data indicated on the voltage plate attached to the machine?
- 3.1. 2. Is the sense of rotation of the motors correct?

3.2 ELECTRIC SPARE PARTS

When ordering them state the type and fabr.-No. of the respective device, and the order-No. of the machine.

3.3 CLEANING

Check motors and switches every six months. If necessary, fill up ball bearing grease, and remove dust. Such work as well as the remachining of burnt parts should be carried out by an expert only. The parts are built-in and not accessible from the outside. Do not use any motor or motorcar fuel for cleaning purposes but preferably soft, non-fibrous cloths (no cleaning wool) which have been dipped into purified benzene.

3.4 SPECIAL CAUSES OF DEFECTS

Motors which have got wet should be examined by an expert and dried prior to their putting into service. Strange noises in the running motor hint at impurities or failing lubrication. Stop the motor at once and investigate. Dismantle and renew switching contacts which are burnt out to such an extent that after switching they do not spring more than by about half a millimeter.

As to the electric connection the following else should be implicitly considered:

VDE-rules and special local regulations should be adhered to most exactly.

The ground terminal of the machine should be connected carefully with the neutral and the earth wire respectively.

The machine is delivered completely wired; the wiring diagrams 3E 2397-A, 3E 2397-A1-1, and 3E 2397-A2-2 show the electric connections within the machine.

Furthermore, the following sources of defects may arise:

3.4. 1. Failure of Control

When operating the push buttons "Coupling on" the latter does not respond.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DC and DU**

Page 13

3 ELECTRIC PARTS

- Causes:**
1. Compressed air supply failing or working with insufficient pressure (look at the manometer).
 2. The limit switch for the single stroke and catching safety device adheres.
 3. The magnet to the control valve does not attract.

3.4. 1.1 The machine stops during the stroke

- Causes:**
1. Interruption of compressed air supply to the coupling or insufficient pressure, evtl. due to a burst pipe (look at the manometer),
 2. Slipping clutch (substantially exceeded torque or oiled friction linings).
 3. The limit switch to the single stroke and catching safety device adheres (possible with selector switch position "Single Stroke" only).

Press immediately the, resp. a "Stop"-button and disconnect the driving motor.

3.4. 1.2 The running machine does not respond to the operation of the "Stop"-button, or executes several strokes though the selector switch is adjusted to "SINGLE STROKE".

- Causes:**
1. The piston of the control valve is adhering.
 2. The electric control contactors are adhering.

The driving motor must be stopped forthwith.

3.5 ATTENDANCE TO THE ELECTRIC INSTALLATION

After 3000 working hours the antifriction bearings should be washed carefully and refilled with suitable grease. The push button "Coupling on" and "Stop" as well as the control sets should be tested for their satisfactory condition.

The insulating value of the stator winding should be tested after 1500 working hours. It must not be less than 1000 Ohms per 1 V working voltage.

The driving motor should be blown from time to time with dry air and checked for its smooth run in its position.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DC and DU**

Page 14

3 ELECTRIC PARTS

The control magnet must be cleaned at the least once a week. Apart from this, it should be checked for satisfactory guide and perfect attraction. An imperfect attraction may cause the destruction of the magnet winding already after a short working time.

The push buttons "Coupling on" and "Stop", the limit switches and other control devices should be tested once a week for their proper functioning.

The contacts should be inspected once a week, upon short circuit immediately, and, if necessary, remachined and renewed respectively.

The control voltage is 220 volts. With a working voltage of 380 volts the control voltage is taken from one phase of the network and the neutral conductor.

After 3000 working hours all lines should be tested at the least once, and upon short circuits immediately for their insulating value which, if possible, is not to be less than 1000 Ohms per 1 V working and control voltage.

All terminal nuts and screws should be checked periodically and retightened, if necessary.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DC/DU 160/630**

Page 15

3 ELECTRIC PARTS**3.6 List of Electric Devices**

<u>Pos.:</u>	<u>Designation:</u>	<u>Type:</u>	<u>Supplier:</u>
a) <u>Main Drive</u>			
1	Three-phase squirrel-cage motor B3, 18.5 KW, 220/380 V, 1435 rpm, 66/38 Amp.	KD 62/4	Sachsenwerk
1	Air contactor with motor protection without covering, control v. 220 V, working v. 380 V, 40 to 64 Amp.	LFB 75	Treptow
1	Double push button insertion	K 205 IIB	IKA Rochlitz
3	1-pole fuse elements EZ, 100 Amp.	Single elements front connection	
3	Time-delayed cartridges 100 Amp.		Prüfger.Berlin
1	Signal lamp, 1-pole, bisectioned		Prüfger.Berl'
1	Circuit-breaker, 250 V, 6 to 10 Amp.	SB1/1 Pl.No.281910	IKA Annaberg
b) <u>Control of Coupling</u>			
1	Three-phase brake lifting magnet, stroke 2.5 cms., 220/380 V, 1000 connections per hour	DB 230 capacity 9 kgs duty cycle 100 %	Naumann
2	Air contactors without motor protection, 220 V, 15 Amp.	K 917 III-2	IKA Oppach
3	1-pole fuse elements EZ 25 Amp.	Single elements front connection	
3	Time-delayed cartridges, 15 Amp		
1	Selector switch: Adjustment, Single stroke, continuous stroke, Off	ETO 16627 Pl.No.: 281910	AEG Annaberg
1	Limit switch with 2 circuits, with roller	4E 5752 (K 2804R)	IKA Rochlitz
3	Single push Button insertions with DR 200 with DU 160	Pl.No.269200 1 x K 205 I 2 x K 205 I em	Apparatebau Treptow
1	Circuit-breaker 250 V, 6 to 10 Amp.	SB 1/1 Pl.No.281910	IKA Annaberg
1	Signal lamp, complete, bisectioned		Prüfgeräte Berlin

50X1-HUM

Working Instruction
for Straight Sided Crank Presses
of Types DU/DC 315/800

Page 15

3 ELECTRIC PARTS

3.6 Parts of Electric Devices

Pcs.:	Designation:	Type:	Supplier:
<u>a) Main Drive</u>			
1	Slipring motor B3; 32 KW; 43.5 HP; 220/380 V; 1390 rpm; 106/61 Amp.	D 76-4	Sachsenwerk
1	Motor contactor without casing, control v. 220 V, working v. 380 V.	100 Rheostat	Apparatebau Treptow
1	Bimetal relay, 64-100 Amp.	U III	Apparatebau Treptow
1	Double push button insertion "On" - "Off"	K 205 IIe	IKA Oppach
1	Signal lamp, complete, 220 V, bisectioned	200 Amp.	
3	Time-delayed fuse cartridges	160 Amp.	
3	1-pole fuse elements, 200 Amp. rear connection	Single elements for switchboard mounting	
1	Surface circuit-breaker, brown insulating material	250 V 6 - 10 Amp.	
1	Protective motor switch without casing, control voltage 220 V, working voltage 380 V	EMF sbr.100 64 - 100 A	A I
<u>b) Drive of Ram Adjustment</u>			
1	Three-phase squirrel-cage motor B5; 2.5 KW; 3.4 HP; 220/380 V; 1390 rpm; 10/5.8 Amp.	D 35 - 4	Sachsenwerk
1	Remote protective motor reversing switch without covering, control voltage 220 V, working v. 380 V	K 817 III-2a 6 - 8 Amp.	IKA Oppach
3	1-pole fuse cartridges <i>elements</i> , 25 Amp.	Single elements, rear connection	
3	Time-delayed cartridges	15 Amp.	
1	Double push button insertion Up - Down	K 205 IIem	IKA Oppach
2	Limit switches with pin	U 1	Bernstein
1	Circuit-breaker, brown, surface mounting, 250 V, 6-10 Amp.		
1	Signal lamp, complete, 220 volts, bisectioned	IPA - K 514	Koch, Ilmenau

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DU/DC 250/800**

Page 15

3 ELECTRIC PARTS**3.6 Parts of Electric Devices**

Pcs.:	Designation:	Type:	Supplier:
a) Main Drive			
1	Three-phase squirrel-cage motor B3, 28 KW; 33 HP; 220/380 V; 1145 rpm; 97/56 Amp.	D 10/4	Wernigerode
1	Motor contactor without covering, control v. 220 V, working v. 380 V	L 100	Rheostat
1	Bimetal relay, 40 to 64 Amp.	U III	App. Treptow
1	Double push button insertion	K 205 IIc	IKA Oppach
3	1-pole fuse elements, 100 Amp.		
3	Time-delayed cartridges, 125 Amp.		
1	Buried circuit-breaker, brown insulating material	250 V 6 to 10 Amp.	
1	Signal lamp, complete, with built-in bulb of 220 volts	bisectioned	Koch, Ilmenau
b) Control of Coupling			
1	Brake lifting magnet, stroke 2.5 cms., attraction capacity 9 kgs., 220/380 V, 1000 connections per hour, duty cycle 100 %	DB 230	Neumann
2	Air contactors without motor protection, 220 V, 15 Amp.	K 917 III-2	SSW Oppach
3	1-pole fuse elements, 25 Amp.		
3	Time-delayed cartridges, 15 Amp.		
1	Selector switch installation for Adjustment, Single stroke, Continuous stroke	WN 1075	AEG Annaberg
1	Limit switch with 2 circuits, with roller	4 E 5752	IKA Oppach
3	Single push button insertions	K 1	W. u. Z.
1	Signal lamp, complete with built-in bulb of 220 volts	bisectioned	Koch, Ilmenau

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DC/DU 160/630**

Page 16

3 ELECTRIC PARTS**3.6 List of Electric Devices**

Pos.:	Designation:	Type:	Supplier:
<u>Additional sets for two-man control</u>			
1	Surface circuit breaker 250 V, brown insulating material, for one-man operation	250 V, 6 - 10 Amp.	
3	Single push button insertions	Pl.No.269200	App. Treptow
1	Three-phase squirrel-cage motor B5; 1.8 KW; 2.5 HP; 220/380 V; 1390 rpm; 7.7/4.4 Amp.	M 65262	Sachsenwerk R.
1	Reversing contactor with motor contactor, control V. 220 V, working v. 380 V, 3.5 - 4.6 Amp.	K 817 III-2a	IKA Oppach
1	Limit switch according to DL 1237	K 2804	
3	1-pole fuse elements, 25 Amp.		
3	Time-delayed cartridges, 15 Amp.		
1	Circuit breaker	SB 1/1 Pl.No.281910	IKA Annaberg
1	Double push button "On - On"	K 205 II em	IKA Rochlitz

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DU/DC 250/800**

Page 16

3 ELECTRIC PARTS**3.6 Parts of Electric Devices**

Pos.:	Designation:	Type:	Supplier:
1	Buried circuit breaker, brown insulating material	250 V, 6-10 Amp.	
	<u>c) Ram Adjustment Drive</u>		
1	Three-phase squirrel-cage motor B5; 1.8 KW; 220/380 V; 7.6/4.4 Amp. 1390 rpm	M 65262	Sachsenwerk
1	Remote protective motor reversing switch without covering, control voltage 220 V, working voltage 380 V, 15 Amp.	K 817 III-2a 3.5 - 4.6 A	IKA Oppach
1	Double push button insertion Up - Down	K 205 II em	IKA Oppach
1	Special limit switch	3 DL 1237	
3	1-pole fuse elements, 25 Amp.	15 Amp.	
3	Time-delayed cartridges		
1	Buried switch brown insulating material	250 V 6-10 Amp.	
1	Signal lamp with glim lamp, bisectioned		Koch, Ilmenau
	<u>d) Miscellaneous</u>		
1	Lever switch, 100 Amp.	ARH 100	IKA Grimma
1	1-pole fuse element	25 Amp.	
1	Cartridge	6 Amp.	
1	Signal lamp with glim lamp		Koch, Ilmenau

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DQ/DO 315/800**

Page 16

3 ELECTRIC PARTS**3.6 Parts of Electric Devices**

Pcs.:	Designation:	Type:	Supplier:
c) Control of Coupling			
2	Air contactors without motor protection, control v. 220 V, working v. 380 V, without covering	K 917 III-2	IKA Oppach
1	Three-phase brake lifting magnet, stroke 2.5 cms., attraction esp. 20 kg; 1000 connections per hour; duty cycle 100 %	DB 460	Naumann, Nieder
3	1-pole fuse elements, 25 Amp.	Single elements, rear connection	
3	Time-delayed cartridges	15 Amp.	
1	Limit switch with 2 circuits, with roller	--	IKA Oppach
1	Surface circuit breaker, brown insulating material	250 V, 6-10 Amp.	
1	Signal lamp, complete, 220 V, bisectioned	IFA - K 514	Koch
1	Selector switch installation for single stroke, continuous stroke, adjustment	WN 1075	IKA Annaberg
3	Single push button insertions	K 1	Weyer

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DC and DU**

Page 17

4 LUBRICATION

The life of the machine depends to the greatest part on its lubrication. Therefore, adhere strictly to the lubrication rules, lubrication instruction, and lubrication plan (drawing). Keep the lubricators closed. Lubricants from unboiled containers must not be used any longer - one single foreign body contained therein may destroy the bearing. Use filtering screens when filling in the oil, also oil cans should be provided with screens. Check continuously the oil level and keep it on correct level.

Drain the oil in service-hot condition only, flush with benzole; petroleum and benzene are not recommendable. Clean the greasing points only with non-fibrous cloths, do not use any cleaning wool.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DC**

Page 18

5 OPERATION . CONSTRUCTION

An exact knowledge of construction and working manner of the machine is necessary for a correct and husbanding operation.

Prior to putting the machine into service study the following description in any case.

5.1 CONSTRUCTION OF THE MACHINE

The general construction of the press may be gathered from the enclosed assembly drawing.

The body consists of the table, the two side stands, and the head piece. These parts are made in welded construction and fastened rigidly to each other by means of four hot-shrunk anchors.

The drive is effected by an electric motor arranged on an adjustable bracket through V-belts driving the flywheel running in antifriction bearings. From the flywheel shaft the movement is transmitted through gearings to the press rod and the ram. As to the multiple disk coupling and the brake a special description is enclosed.

The ram slides between readjustable guide rails. The cover above the draw-back ring in the ram is adjusted, by means of balancing disks, in such a way that a closing guide of the pressure spindle ball and the pressure pan is attained.

The vertical adjustment of the ram is effected through an oil-immersed running worm gear by a reversible electric motor. The extent of adjustment, which must not be exceeded, is transmitted mechanically to the graduation arranged at the front side of the ram. As soon as, with motor drive, the upper and the lower limit position of adjustment respectively is reached the motor is stopped by responding limit switches.

The ram is balanced by means of counter-weights provided in the crank wheels.

If the ejector is not to be used the pressure screws should be put back to such an extent that the ejector is put out of operation; a wrong adjustment of the pressure screws entails damages to the machine.

5.2 OPERATION OF THE MACHINE

The driving motor is a squirrel-cage motor of design B3. Its starting time with idle-running flywheel mass amounts to about 15 to 30 seconds. The speed drop per working stroke is not to exceed 25 per cent. of the nominal speed. The protective motor switch takes care

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DC**

Page 19

5 OPERATION . CONSTRUCTION

of overload protection, and a three-pole fuse protects the motor from short-circuits.

5.2 1. Start of the Driving Motor

1. Close the control current switch "Main Motor" in the switch cabinet. (On the main operating desk the corresponding signal lamp is lighting.)
2. Press the push button "On" arranged on the main operating desk.

2. Stop of the Driving Motor

1. Press the push button "Off" arranged on the main operating desk.
2. Disconnect the control current switch in the switch cabinet (disconnection required at the end of work, not during short time working pauses.).

Prior to finished high-run the machine should not be stopped unless upon danger.

5.2 3. Operation of the Ram Adjusting Motor

1. Close the control current switch "Ram Motor" in the switch cabinet. (On the main operating desk the corresponding signal lamp is lighting.)
2. Press the push button "Up" or "Down" arranged on the main operating desk.
3. Disconnect the control current switch upon finished adjustment of the ram.

The adjusting motor is protected against overload by a protective motor switch, and against short circuits by a three-pole, time-delayed cartridge fuse.

5.2 4. The Control

According to its size and type, the machine is equipped with the electric-pneumatic "One-man" two-hand control. For engaging the coupling, the push buttons "Coupling on" must be operated with both hands.

When pressing the push button "Stop" the coupling is disengaged.

On the right front side of the operating desk there is a selector switch with following switch positions: "Adjustment" - "Single Stroke" - "Continuous stroke" - and "Off". The switch "Coupling" for connecting and interrupting the control current is arranged in the switch cabinet. Upon connection of

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DC**

Page 20

5 OPERATION . CONSTRUCTION

the control current the signal lamp installed on the selector switch is lighting.

The short-circuit protection is provided by means of a three-pole fuse.

5.2 5. Operation of the Control with Corresponding Selector Switch Position

5.2 5.1 Selector switch position "Adjustment":

With this connection for the adjustment of tools the ram can be moved by steps, and that upon short operation of the push buttons "Coupling on".

**5.2 5.2 Selector switch position "Single Stroke":
(see 2.5 2.)**

**5.2 5.3 Selector switch position "Continuous Stroke":
(see 2.5 3.)**

5.2 5.4 Selector switch position "Off":

With this position the coupling cannot be engaged, and an incidental operation of the push buttons "Coupling on" does not entail any movement of the ram.

A special instruction gives informations concerning the electric-pneumatic control.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DU 160/630**

Page 21

7 GEAR PLANS . SPARE PARTS

Parts mainly subject to wear:

Pos.:	Designation:	Drawing No.:
1	Lever acting by pressure	80 WN 1103
5	Inside disks	B 80 WN 1110
7	Outside disks	80 WN 1111 181a
4	End disks	B 80 WN 1112
1	Set of friction linings	B 80 WN 1113
	Multiple disk coupling	
140	Tube rivets	5 x 9.5 x 16 DIN 7340
112	Tube rivets	5 x 9.5 x 10 DIN 7340
1	Pull spike	A 5 WN 3402
1	Set spike	B 5
1	Bush	Engagement of air 40 Ø x 36 WN 166
1	Bush	45 Ø x 40 WN 166 181a
1	Set of bearing bushes for press rods	Main press 3 DU 1023
1	Round bush	5 DU 1013
1	Round bush	5 DU 1014 832/11
1	Round bush	5 DU 1015
1	Set of bearing bushes	Crank shaft 3 DU 1021
1	Set of bearing bushes	3 DU 1047
2	Wear rails	4 DU 972
1	Worm shaft	4 PR 1264
1	Bush	A 60 Ø x 95 WN 146
1	Worm rim	3 PR 1262
1	Draw-back ring	3 DU 1115
1	Pressure spindle	4 DU 1101
2	Wear rails	Ram adjustment 4 DU 972
1	Pressure spindle	(Side press) 4 DU 959
2	Cylinder bearings	Flywheel shaft NUJL 120 DIN 5412
1	Self-aligning roller bearing	22320 DIN 635

50X1-HUM

Working Instruction
for Straight Sided Crank Presses
of Type DC 160/630

Page 11

7 GEAR PLANS - SPARE PARTS

Parts mainly subject to wear:

Pos.:	Designation:	Drawing No.:
1	Lever acting by pressure	80 WN 1103
5	Inside disks	B 80 WN 1110
7	Outside disks	80 WN 1111 181a
4	End disks	B 80 WN 1112
1	Set of friction linings	B 80 WN 1113
	Multiple disk coupling	
140	Tube rivets	5 x 9.5 x 16 DIN 7340
112	Tube rivets	5 x 9.5 x 10 DIN 7340
1	Pull spike	A 5 WN 3402
1	Set spike	B 5
1	Bush	40 Ø x 36 WN 166
1	Bush	45 Ø x 40 WN 166 181a
1	Set of bearing bushes for press rods	Main press 3 DU 1023
1	Round bush	Gearing shaft 5 DU 1013
1	Round bush	" " 5 DU 1014 832/11
1	Round bush	" " 5 DU 1015
1	Set of bearing bushes	Crank shaft 3 DU 1021
1	Set of bearing bushes	3 DU 1047
2	Wear rails	4 DU 972
1	Worm shaft	4 PR 1264
1	Bush	Ram adjustment A 6Q Ø x 95 WN 146
1	Worm rim	(Main press) 3 PR 1262
1	Draw-back ring	3 DU 1115
1	Pressure spindle	4 DU 1101
2	Cylinder bearings	Flywheel shaft NUJL 120 DIN 5412
1	Self-aligning roller bearing	22320 DIN 635

50X1-HUM

Working Instruction
for Straight Sided Crank Presses
of Types DW/DC 250/800

Page 21

7 GEAR PLANS - SPARE PARTS

Parts mainly subject to wear:

Pcs.:	Designation:	Type:
1	Grooved bearing	52409 DIN 715
1	Cylinder bearing	NUM 110 DIN 5412
1	Grooved bearing Engagement of air	52224 DIN 715
3	Packing rings Flywheel shaft	165 WN 5404
1	Packing ring	45 WN 5404
1	Packing ring Engagement of air	115 WN 5404
1	Packing ring	130 WN 5404
1	Grooved ring sleeve	180x210x15 DIN 6505
1	Grooved ring sleeve Engagement of air	W 240 - 3
1	Round rubber packing	6 Ø x 915 rubber
1	Round rubber packing Engagement of air	5 Ø x 345 rubber
1	Rubber cord	6 Ø x 950 rubber
1	Slammering Main press	80 x 100 x 13 rubber
3	Springs Multiple disk coupling	3 WN 30 834/5
2	Springs Engagement of air	21 WN 30
1	Metal hose	8 Ø x 1000
2	Hose clamps	8 WN 24 without mark
4	V-belts	25x16x3150 DIN 2215
2	Signal lamps for electric installation	220 V, JFA-K 514
3	Fuse cartridges for main drive	80 Amp.
3	Fuse cartridges for control of coupling	15 Amp.

50X1-HUM

Working Instruction
for Straight Sided Crank Presses
of Types DW/DC 250/800

Page 21

7 GEAR PLANS - SPARE PARTS

Parts mainly subject to wear:

Pcs.:	Designation:	Type:
1	Grooved bearing	52409 DIN 715
1	Cylinder bearing	NUM 110 DIN 5412
1	Grooved bearing	52224 DIN 715
3	Packing rings	Flywheel shaft 165 WN 5404
1	Packing ring	45 WN 5404
1	Packing ring	Engagement of air 115 WN 5404
1	Packing ring	130 WN 5404
1	Grooved ring sleeve	180x210x15 DIN 6505
1	Grooved ring sleeve	Engagement of air 240 - 3
1	Round rubber packing	6 Ø x 315 rubber
1	Round rubber packing	Engagement of air 5 Ø x 345 rubber
1	Rubber cord	Ram adjustment 6 Ø x 950 rubber
1	Simmering	Main press 80 x 100 x 13 rubber
3	Springs	Multiple disk coupling 3 WN 30
2	Springs	Engagement of air 21 WN 30 834/5
1	Metal hose	8 Ø x 1000
2	Hose clamps	8 WN 24 without mark
4	V-belts	25x16x3150 DIN 2215
2	Signal lamps for electric installation	220 V, JPA-K 514
3	Fuse cartridges for main drive	80 Amp.
3	Fuse cartridges for control of coupling	15 Amp.

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Types DU/DC 160/630**

Page 22

7 GEAR PLANS - SPARE PARTS

Parts mainly subject to wear:

Pos.:	Designation:	Drawing No.:
1	Grooved bearing	52408 DIN 715
1	Cylinder bearing	Engagement of air NUN 100 DIN 5412
1	Grooved bearing	52220 DIN 715
3	Packing ring for	Flywheel shaft 135 WN 5404
1	Packing ring	40 WN 5404
1	Packing ring	Engagement of air 95 WN 5404
1	Packing ring	110 WN 5404
1	Grooved ring sleeve	Engagement of air 150x180x15 DIN 6505
1	Grooved ring sleeve	200x240x20 DIN 6505
1	Round rubber packing	Engagement of air 6 Ø x 240 av.Ø endl.
1	Round rubber packing	5 Ø x 90 av.Ø endl.
1	Round rubber packing	Ram adjustment 6 Ø x 240 av.Ø endl.
3	Springs for multiple disk coupling	13 WN 30 181a
2	Springs for engagement of air	22 WN 30 832/11
1	Metal hose	800 WN 28
4	V-belts	25x16x2800 DIN 2215
2	Signal lamps for electric equipment 220 V	JPA - K 514
3	Fuse cartridges for main drive	80 Amp.
3	Fuse cartridges for control of coupling	15 Amp.
1	Limit switch with roller	5 E 5752

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DC 250/800**

Page 22

7 GEAR PLANS - SPARE PARTS

Parts mainly subject to wear:

Pos.:	Designation:	Type:
1	Lever acting by pressure	B 125 WN 1103
5	Inside disks	B 125 WN 1110 (1)
7	Outside disks	125 WN 1111
4	End disks	B 125 WN 1112 (1)
1	Set of friction linings	B 125 WN 1113
140	Tube rivets	5 x 9.5 x 16 DIN 7340
112	Tube rivets	5 x 9.5 x 10 DIN 7340
1	Full spike	A 5 WN 3402
1	Set spike	B 5 WN 3402
1	Bush	450 x 40 WN 166
1	Bush	500 x 45 WN 166 834/
1	Upper bearing bush	3 DU 139/1
1	Lower bearing bush	3 DU 139/2
1	Joining bush	5 DU 1298
1	Joining bush	5 DU 1299 834/5
1	Joining bush	5 DU 1300
1	Left upper bearing bush	3 DU 147/1
1	Right lower bearing bush	3 DU 147/1
1	Right upper bearing bush	3 DU 148/1
1	Right lower bearing bush	3 DU 148/2
1	Worm shaft	4 DU 1027
2	Wear rails	4 DU 1262
1	Joining bush	5 DU 1028 834/5
1	Draw-back ring	3 DU 1221
1	Helical gear wheel	5 DU 1025
1	Pressure spindle	3 DU 23
2	Cylinder bearings	NUJL 140 DIN 5412
1	Self-aligning roller bearing	22324 DIN 635

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DC 315/800**

Page 22

7 GEAR PLANS - SPARE PARTS

Parts mainly subject to wear:

Pos.:	Designation:	Drawing No.:
3	Lever acting by pressure	A 200 WN 1103
5	Inside disks	B 200 WN 1110
7	Outside disks	200 WN 1111
4	End disks	B 200 WN 1112
56	Segments Multiple disk coupling	B 200 WN 1113
140	Tube rivets	6 x 11.5 x 16 DIN7340
112	Tube rivets	6 x 11.5 x 10 DIN7340
1	Full spike	A 6 WN 4302
1	Set spike	B 6 WN 4302
1	Bush	50 Ø x 45 WN 166
1	Bush Engagement of air	55 Ø x 50 WN 166 181a
1	Set of bearing bushes Press rod	3 DU 2141
1	Joining bush	5 DU 2150
1	Joining bush Gearing	5 DB 2149 876/6
1	Joining bush	5 DU 2139
1	Set of bearing bushes	3 DB 2152
1	Set of bearing bushes Crank shaft	3 DU 2151
2	Wear rails	4 DU 2214
2	Wear rails	5 DU 2215
1	Worm shaft	3 DU 1664
2	Bushes Ram adjustment	5 DB 1743 876/6
1	Worm rim	4 DU 1739
1	Draw-back ring	3 DU 1212
1	Pressure spindle	4 DU 2111

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DU 250/800**

Page 22

7 GEAR PLANS - SPARE PARTS

Parts mainly subject to wear:

Pcs.:	Designation:	Type:
1	Lever acting by pressure	125 WN 1103
5	Inside disks	B 125 WN 1110 (1)
7	Outside disks	125 WN 1111
4	End disks	B 125 WN 1112 (1)
1	Set of friction linings	B 125 WN 1113
140	Tube rivets	5 x 9.5 x 16 DIN 7340
112	Tube rivets	5 x 9.5 x 10 DIN 7340
1	Pull spike	A 5 WN 3402
1	Set. spike	B 5 WN 3402
1	Bush	450 x 40 WN 166
1	Bush	500 x 45 WN 166 834/
1	Upper bearing bush	Press rod 3 DU 139/1
1	Lower bearing bush	(Main press) 3 DU 139/2
1	Joining bush	Press rod (Side press) G 1600 x 120 WN 147
		834/5
1	Joining bush	5 DU 1298
1	Joining bush	5 DU 1299 834/5
1	Joining bush	5 DU 1300
1	Left upper bearing bush	3 DU 147/1
1	Right lower bearing bush	3 DU 147/1
1	Right upper bearing bush	3 DU 148/1
1	Right lower bearing bush	3 DU 148/2
1	Worm shaft	4 DU 1027
2	Wear rails	4 DU 1262
1	Joining bush	Ram adjustment 5 DU 1028
1	Draw-back ring	(Main press) 3 DU 1221 834/5
1	Helical gear wheel	5 DU 1025
1	Pressure spindle	3 DU 23
2	Wear rails	Ram adjustment 4 DU 1268
1	Pressure spindle	(Side press) 4 DU 1212
2	Cylinder bearings	NUJL 140 DIN 5412
1	Self-aligning roller bearing	Flywheel shaft 22324 DIN 635

50X1-HUM

**Working Instruction
for Straight Sided Crank Presses
of Type DU 315/800**

Page 22

7 GEAR PLANS - SPARE PARTS

Parts mainly subject to wear:

Pcs.:	Designation:	Drawing No.:
3	Levers acting by pressure	A 200 WN 1103
5	Inside disks	B 200 WN 1110
7	Outside disks	200 WN 1111
4	End disks	B 200 WN 1112
56	Segments Multiple disk coupling	B 200 WN 1113
140	Tube rivets	6 x 11.5 x 16 DIN 7340
112	Tube rivets	6 x 11.5 x 10 DIN 7340
1	Full spike	A 6 WN 3402
1	Set spike	B 6 WN 4302
1	Bush	500 x 45 WN 166
1	Bush Engagement of air	550 x 50 WN 166 181a
1	Set of bearing bushes Press rod (Main press)	3 DU 2141
1	Joining bush Press rod (Side press)	G 180 Ø x 130 WN 147:R ₁ -10 876/6
1	Joining bush	5 DU 2150
1	Joining bush Gearing	5 DU 2149 876/6
1	Joining bush	5 DU 2139
1	Set of bearing bushes	3 DU 2152
1	Set of bearing bushes Crank shaft	3 DU 2151
2	Wear rails	4 DU 2214
2	Wear rails	5 DU 2215
1	Worm shaft	3 DU 1664
2	Bushes Ram adjustment (Main press)	5 DU 1743 876/6
1	Worm rim	4 DU 1739
1	Draw-back ring	3 DU 1212
1	Pressure spindle	4 DU 2111
2	Wear rails Ram adjustment	4 DU 2216
1	Pressure spindle (Side press)	4 DU 2122

50X1-HUM